The Commercial Car Journal

Local Scrapping Companies—

Would Trade Cooperatives Formed to Wreck Old Trucks Improve Truck Merchandising Conditions?

IN perhaps half a dozen important cities cooperative organizations have been formed by local dealers for the purpose of scrapping "junk" motor vehicles.

While these organizations have for their primary purpose the improvement of conditions surrounding the handling of used passenger cars, their existence suggests that something of the same nature might be tried in the truck with the possible elimination of one of the factors affecting the commercial vehicle market unfavorably.

One of the objectives of a

scrapping organization is, of course, to assure the dealers cooperating that the vehicles they designate for the junk pile and which they sell with that understanding, actually are wrecked and removed from the highways for all time. It has happened that a truck sold to a junk dealer at scrap price has been resold by the junk man at a relatively large advance. Not always—but occasionally a desirable prospect thus is removed from the used truck market. Then, too, the man who buys the scrap truck from the junk man, may do so with the express purpose of trading it in, at a considerable advance on a new job, which means that another dealer suffers a loss. That has happened too.

However, when dealers get together and operate their own scrapping organization, they know that the trucks they sell to it are going to be removed from the market. Of course, each individual dealer can get around this by doing his own scrapping of the trucks he marks for the junk pile. But by doing the job cooperatively, the work can be done with cheaper labor, an investment can be made in labor-saving equipment and more skillful marketing of the scrap

is likely to result.

One plan of financing a scrapping organization is for the cooperating dealers to subscribe for blocks of stock. The company then formed may buy at suitable prices used vehicles to be scrapped. If the membership wishes, the company may be limited to the purchase of junk vehicles from member dealers or it may buy from

N some quarters much study and thought is being given to the possibilties of local cooperative scrapping organizations. The general objectives of such an enterprise will be more or less obvious to the trade so they are touched upon only briefly herein. Commercial Car Journal will be glad to have opinions from its readers regarding the practicability of such organizations and their possibilities for the improvement of the conditions surrounding truck merchandising.

anyone. The company junks the vehicles which it purchases, sorts the scrap and puts it into such condition as to size and so forth, as the dictates of the scrap market require.

Whether to salvage parts is a difficult point to decide and some of the organizations now in operation are putting usable parts into stock for resale while others are selling everything as junk. Of course, the sale of used parts affects the parts business of the dealers but, on the other hand, the parts which it is possible to salvage frequently are

not in the so-called "high-turnover" class and consequently are not the most profitable merchandise for the dealer to stock. As far as the scrapping company is concerned, whether it is profitable for it to salvage parts for resale is an open one to which no definite answer can be made from experience at the present time.

In the larger cities, the truck trade might get together to form a scrapping organization although there does not seem to be any very pertinent reason why the work should not be carried on in conjunction with the passenger car dealers if they are interested or already have formed a company for the purpose. In the smaller towns and cities, it would seem that one organization for both the passenger car and truck trade be the only practical answer considering that some volume is essential to the economical operation of

a scrapping cooperative.

The cooperative scrapping plan is not a cure-all. It is a possible remedy for one of the factors which make the used truck such a serious drain on profits. Dealers in Kansas City, Omaha, Minneapolis, Milwaukee and other cities think enough of its possibilities to give it a trial and in still other cities its adoption is being considered. Among the points requiring careful study are the possibilities of making the organization self-sustaining and, the problem of determining, if operating losses are expected, whether the advantages gained would be sufficient to compensate for those losses.

Investigation Analysis Planning

Before the

Builds Volume Quick Los An

BOUT one year ago the Sterling Motor Truck Company of California was formed under the management of W. B. Hambly to distribute Sterling Trucks in Southern California, where they previously had not been represented. After a preliminary period of getting squared away, this firm hit a stride that has resulted in the building up of a volume of business aggregating \$348,000 during the last five months, with average sales of nearly three trucks a week during this period. Los Angeles is generally regarded as one of America's most competitive truck merchandising markets and, in light of these facts, the record established by Hambly and his organization is particularly striking.

Digging for the "how" of this story of successful truck merchandising reveals six salient points:

1. Careful selection of salesmen for their adaptability to different lines of business. A graduate mechanical engineer chosen to make all calls on engineers and mechanical superintendents of large corporations where the salesman had to talk with highly technical men. A man with practical experience in dump truck work to call on dump truck operators. A Jewish salesman to work among people of his kind engaged largely in fruit and vegetable distribution. A man with a thorough understanding of the problems of wholesalers such as grocers, dairies, ice cream and furniture manufacturers to concentrate his efforts among this trade. In short, selecting men and training them to be able to give tangible help to the different truck operators, rather than just attempting to sell them trucks.

2. Carefully studying the prospect's business. No attempt to advance selling arguments until

Sales of \$348,000 in five months is an unusual record, especially for a business which is completing the first year of its life. Yet this is the record of accomplishment of Sterling in Los Angeles. Among the factors contributing to this record are the careful selection of salesmen for their adaptability to different classes of prospects and the limitation of the number of prospects assigned to a salesman to secure concentrated sales effort.

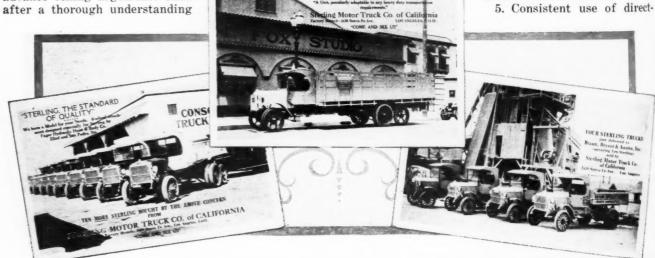
You can use the sales and management ideas described in the accompanying article in your business.

was obtained of the exact transportation requirements of each operator.

3. Concentrated selling effort. Systematically cataloging a restricted list of fleet operators to whom the Sterling equipment was particularly adapted, and then systematically cultivating them, rather than combing the entire field.

4. Effective use of portable motion picture projector

in a prospect's private office to show operating efficiency of trucks in actual service.



After each truck delivery the Los Angeles firm has a photograph taken with background suggestive of the business, which are reproduced on post-cards and sent to other operators

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by-mail advertising. Making the most out of each sale by proclaiming it to other operators in the territory.

6. Providing added incentive to salesmen through quarterly bonuses. Salesmen shooting above their quotas receive 1 to 1½ per cent additional commissions according to production.

"The most important thing in successful truck merchandising, as I see it, is to get close to a man's problems," says Hambly. "And that has been the foundation of our sales plan in this territory.

"For a salesman to call on a prospect and tell him what a fine truck he has, and what wonderful performance it will give, is one thing. For a salesman actually to don a pair of overalls and get out with the drivers on the road, study the actual service in which the prospect's equipment is engaged, and then offer definite, worthwhile recommendations, based on studied fact, is still another. Our salesmen are in business suit and white collars when they should be, but also they are in overalls and riding the trucks when necessary to gain an understanding of a firm's problems. Truck merchandising demands that a salesman first obtain an intelligent appreciation of the particular service in which he seeks to enlist some of the trucks he represents. This appreciation cannot be obtained by merely learning that the firm delivers milk, or operates in long haul transportation, or is otherwise engaged. The salesman must equip himself with as many facts about his prospect's business as he can possibly assembly, and he should do this before he makes any attempt to sell. When he is fully armed with all necessary information, he then can go to his prospect with a program that means something and which, because it is predicated upon studied fact, demands attention and consideration.

"An example of how it pays to get close to an operator's business is presented in the case of our relations with a certain Los Angeles transportation company engaged in long haul work. Our salesman assigned to this class of business spent two weeks riding the firm's trucks with the drivers over the different routes before any suggestion of direct sales effort was made. This particular company does much of its hauling over a long stretch of very hilly country, and into the oil fields.



W. B. Hambly, general manager of the Sterling Motor Truck Company of California at Los Angeles

Power, traction and braking efficiency are dominant considerations that had to be fully understood before any intelligent sales effort could possibly be made.

"When we went to this particular prospect with our program, he was immediately impressed with the thoroughness with which we had studied his problems, and we had little difficulty in interesting him in our equipment. It so happens in this case, it was necessary to have our factory engineers introduce new engineering features in our trucks in order to adequately satisfy the particular transportation demands. In fact, the six cylinder truck which is now gaining such wide attention in the truck industry has actually resulted from careful investigation into transportation requirements right here in Southern California.

"The most common fault in truck merchandising, according to my view, is too much unplanned selling effort, and not enough investigation, analysis and programming before the first sales call. If our sales record may be cited as anything above the ordinary, it may be primarily explained in the fact that our sales campaign from the inception has been predicated upon a policy calling for complete understanding of each prospect's problems before unleashing any direct sales ammunition."

Hambly concentrates the sales energy of his organization essentially among fleet operators using a minimum of three trucks. He proceeds on the theory that it requires just as much effort to sell the individual buyers as it does the big buyers, and that results invariably are much greater when this effort is directed toward the latter audience. Any volume of sales to the larger fleet operators, he says, will always bring in a

(Turn to page 30, please)

This Wholesale Man Is Both Salesmanager and Salesman for His Dealers

By K. H. Lansing

factory branch may fulfill exceptional functions making for close and helpful contact with dealers and their customers is exemplified in the case of the Brockway Motor Truck Corp., Philadelphia. The same plan is applicable to a distributor's wholesale manager in relation to his group of dealers. S. E. Marley, branch manager, had extensive experience as a distributor before the local Brockway plant was made a factory branch and, as far as expedient, has retained distributorship ideas and practices in caring for dealers.

The wholesale manager, J. L. Graham, who is more of a "territory traveler" than is usual in one holding this office, has constant duties that are both educative and instructive along the lines of practical assistance to the branch's 15 dealerships, striving to keep them keyed up, with "Get the Order" as the ultimate goal. His position might be described as analogous, in a large way, to that of a salesmanager working with a local group of salesmen, the dealers representing his sales force. While he has his headquarters at the factory branch, almost his entire time is spent on the road, looking after the interests of the dealers throughout the territory, which covers eastern Pennsylvania, southern New Jersey and the State of Delaware.

Among the wholesale manager's chief duties are the following:

In the spring, when contracts are being signed, he is in control of the territory, acting as "go-between" with relation to the branch manager, to whose orders he is subject, and the dealers.

He works not only with the dealers, but also with their salesmen, to keep their selling enthusiasm at concert pitch.

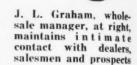
He is constantly giving them sound merchandising advice and helping them to obtain prospects and turn them into customers.

He finds time to call, when desirable, on a dealer's customer at just the psychological moment to swing a difficult sale.

Through his constant, close contacts with the dealers and by strengthening their interest and loyalty, he helps make it unnecessary for the branch to change them, thus serving to maintain solidarity in the organization. Most of the branch's dealers have been with it at least 10 years.

Because of his continuously widening experience, he possesses certain knowledge that the dealer, ordinarily, does not acquire of himself and he relays such information to the dealers and their salesmen when it will prove helpful. He makes it his business to know the dealer's customers and prospects about as well as do the dealer and his salesmen.

He not only instructs the dealer and his salesmen as to the various types of truck models suitable to the needs of the prospects, but on occasion will advise the



S. E. Marley, branch manager, Brockway Motor Truck Corp,

prospects what type of models would best serve their interests.

He supplies the dealer and his salesmen with all necessary technical information relating to the factory products.

Between trips he writes any necessary or desirable letters to dealers. He handles all his own correspondence and keeps a record of his own transactions covering appointments, prospects and sales and largely makes out his own schedule of trips.

As the truck business usually shows particular activity in certain localities at certain times, the wholesale manager arranges his itinerary so that he will be present at those points where business is especially brisk, or promises to be.

In a locality where there is marked business activity, the wholesale manager will, for instance, spend two days in each week with a dealer, for three successive weeks. Ordinarily, this amount of time is sufficient, but he has his instructions to stay with a dealer for the time required to help him line up his prospects. Dealers in centers where trading is at its peak will be thus called on in rotation.

When, however, there is no particularly busy spot in the territory, the wholesale manager every two weeks will call on each of the branch's dealers, learn his needs and help him and his salesmen in any of the ways indicated, staying with any one dealer not longer than one day.

Mr. Marley holds his weekly sales meetings at the branch on Friday and the wholesale manager attends them and takes part in the discussions of any territorial problems. He does no work in direct connection with the branch salesmen, however. It is after the weekly sessions that he maps out his route of territorial calls. He usually is at the branch early Saturday morning. The wholesale manager always plays a conspicuous role at the annual meeting of the organization and both gives and receives valuable information at such times, describing any difficulties which may have arisen in the territory and discussing means of overcoming them, or if they have been surmounted, explains how it was accomplished.

(Turn to page 30, please)

Service to Customers-

The Primary Consideration in the Location and Design of New Los Angeles Branch Building

By H. C. Marble

Vice-President in Charge of Service The White Company

EXISTING methods of marketing motor trucks and buses in this era of keen competition compels a study of two primary factors before a new distributing branch is established: First, a thorough analysis of the potential market for new and used cars; second, a survey to assure the convenience of service facilities for operators.

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The analysis of the market in the surrounding territory is the determining factor for establishing a sales and service branch. This is followed by the selection of the site, design and construction of the building, and equipping the building for operation.

After it has been determined that the community affords a reasonable market for the sale of new trucks and buses, the next consideration is the selection of the site. The primary consideration is the relation of the site to the center of the truck population and the development of its future growth. This must be balanced with the zoning ordinances and traffic regulations in order to afford ease of access to the building from all sections of the city for the operators, as well as ingress and egress to and from the building.

The building is designed primarily to provide most economical and efficient arrangement for housing the operating equipment and carrying on the routine of service work. This requires proper lighting both natural and artificial, ventilation, heating and sanitation, all of which are essential to obtain satisfactory service production. In design, the building is the industrial type, and first consideration is given to its adaptability for sales and service operation rather than to architectural features.

The equipment to be installed is tested and proven in actual operation to afford the best labor-saving devices and the most accurate and serviceable machinery possible to produce economical and satisfactory service work.

The foregoing is well illustrated by one of the most recent building operations of The White Company, the new sales and service station on the Company's property in Los Angeles, costing half a million dollars, and occupied in September.

The property, located at Washington Street and Maple Avenue, extends 475 feet east on Washington Street, 337 View of the new Los Angeles White branch with H. C. Marble, vice-president in charge of service of the White Co. shown above and Gene Etzler district service manager below.

feet south on Maple Avenue and 475 feet east on Twentieth Street. Washington Street, being one of the main crosstown thoroughfares, affords a direct artery of communication from the east and west sections of the city. Maple Avenue, extending north almost directly into the center of the retail district, affords a direct artery to this section of the city; extending south, it connects with the industrial area in the south and southwest sections of the city. Twentieth Street, on which the building fronts, is not a main thoroughfare and is not heavily traveled, providing convenient parking area for the operator coming to the service station.

The building occupies approximately 66,000 square feet of the entire area of the site, leaving ample ground space for the the expansion of the building both in length and depth. Future plans call for the erection of an office building, also larger sales display area, fronting on Washington Street.

The building itself comprises approximately 132,000 square feet of floor space. It is designed with a basement and one floor. The basement area, being only a few feet below grade, affords a light and well ventilated storage area. In addition to the new and used car storage, there is a large locker room with showers and all the necessary toilet facilities for the entire shop personnel. The space

under the ramp is partitioned off and equipped with shelving for the storage of non-current files, sales literature, stationery, etc.

A modern heating unit is installed in the basement to supply steam for heating the building and to furnish the hot water for toilets and wash racks.

The main floor is accessible from the street by means of a double ramp of approximately 10 per cent grade. The ramp is designed with ample width to provide ease of ingress and egress to the building and is divided in the center by a row of columns.

The entrance and exit is equipped with double folding swinging doors, mechanically operated by electric motors controlled by switches conveniently located in the office.

The inspection room, which is approximately 70 feet in width, extends the depth of the building. A monitor extends from the head of the ramp approximately 85 feet in depth over the inspection room thereby providing good

natural lighting in this area. The monitor is equipped with ventilating sash.

Along the Twentieth Street frontage, and to a depth of 60 feet, the floor space is divided into the office and stock room areas. The office area comprises approximately 7000 square feet, with the entrance lobby in the center.

The parts department is so located that it is readily accessible from the street, both for the customer and for the transportation companies delivering and receiving material. The location also affords convenient delivery of repair parts to the shop, which it parallels. The routine of the operation of the parts department makes it very desirable that this division of the organization be in close communication to the clerical division, which maintains the inventories and accounting records so vital to successful operation.

The parts department is equipped throughout with racks of steel for the varying types and descriptions of individual items which comprise the complete motor vehicles. In addition to the steel bins there are specially designed trucks, dollies and hoisting equipment to facilitate the handling of the repair parts as they are received and delivered.

The shop area comprises approximately 35,000 square feet in two shop bays. These shop bays are interspersed with columns spaced on 21 feet x 25 feet centers in the working area and 29 feet x 25 feet in the aisle areas. The spacing of the columns in the working areas provides for two trucks between each column, giving ample room for

pulling wheels and performing such other operations as may require considerable working space between the trucks. The aisle way affords ease in handling the trucks in and out of the working space.

Across the rear of the two shop bays is the machine shop, with ample natural lighting from the rear windows. The machine shop is equipped with many standard machine tools as well as a complete assortment of special tools which have been developed for



J. L. Sydnor, district manager

reducing the labor hours required in repairing White units. A brief description of several interesting features will tend to show the possibilities of repair service in this building. The machine tools are all individually motor-driven, permitting the shop to be entirely free from overhead line shafting and belting, The particular use of individual driven machines in service stations is adapted to the intermittent service given the various tools. The machine shop is equipped with

19-39 in. gap lathe, 16 in. tool-maker's lathe, drill presses, sensitive drill, combination disk and wheel grinder, small two-wheel grinder, portable grinder, tool-post grinder, 50-ton arbor press, bench arbor press and power saw.

There is a very complete line of small tools consisting of the various "C" clamps, thread gages, sledge hammers, fender tools, blacksmith tools, drills, reamers, wrenches, etc. In addition to this micrometers are available providing measurements to .005 of an inch.

In the smaller tools which are standard on the market there are such items as grease guns, steel horses, jacks, pullers, vises, portable cranes, hoists, trolleys and acetylene welding equipment.

The tools are kept in the tool room in the center of the shop which is equipped with adjustable steel racks, the compartments of which are located so that the established set of equipment for a branch of this size can be properly stored and handled.

There will be a large individual air compressor installed in the boiler room which will supply the air throughout the shop. A liberal air receiver increases the time between the automatic starting and stopping of the compressor.

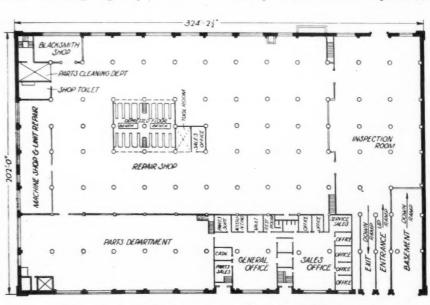
The branch will be equipped with two service cars so that emergency repairs can be made on the road, or wrecks may be speedily picked up and brought to the branch for repairs.

Adjacent to the machine shop is the cleaning room. This is equipped with a high pressure steam cleaning apparatus, employing a high pressure gas-fired boiler and a gun from which is ejected a chemical solution combined with steam for cleaning dirt, grease and paint from the various units of the truck which may be removed for repairs. This room also has ample space in which to place a truck or bus from which it is desired to remove all the dirt, or to remove the paint in preparation for painting.

A depressed floor area is provided in the center and to-

ward the rear of the shop area for the accommodation of eight vehicles. The depressed area is equipped with all service outlets, such as water, air and lighting convencience plugs, floor drains and a series of vent ducts. It is designed with a steel channel and beamed runways on each edge of which is an angle that will permit the laying of a temporary plank floor on the level of the main shop floor.

The entire inspection and shop (Turn to page 30, please)



Floor plan of White's new one-half million dollar branch

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Bus Again Is a Dominant Subject at A. E. R. A. Show

Railway Men Foresee Early Arrival at Saturation Point of Bus Line

PROVISION of more passenger capacity in urban buses, greater luxury and comfort in interurban designs, and still further increases in the power-weight ratio obtained in some case by the use of larger engines, in others by improved design and in two instances by the adoption of all-duralumin body construction, were among the outstanding developments of the bus exhibits at the American Electric Railway Association Show, held in Cleveland, Oct. 1-7.

From the automotive standpoint, one of the important developments of the convention sessions was the adoption of revisions to the Association's constitution making it possible for so-called "independent" operators of buses to become members. Previously only those exclusive bus operators who formerly operated railway service were eligible. The revisions in the constitution make the association one of urban and interurban transportation companies and allied interests without any limitation on the type of equipment employed to render service.

Some further expansion in the operation of buses by electric railways but a comparatively early arrival at a point of approximate saturation is anticipated by the Association's Committee on Motor Vehicle Information. This viewpoint is rather surprising in view of the fact that, according to A. E. R. A. figures, the number of buses operated by electric railways increased by about 1800 during the last year. The numerical gain is within about 300 of that shown in the preceding year but, of course, the percentage gain is considerably less and it is only natural to expect that it would be. The number of electric railways operating buses has remained stationary at 367 for the last six months and has increased only 29 in the last year. Inasmuch as the number of electric railways is not increasing materially, if at all, it is to be expected that the number of electric railway bus operations would reach approximate stabilization at an early date. Commenting on these figures AERA says in part: "The number of buses and the miles of route operated by those companies that have already adopted the bus to their transportation systems are continuing to increase with considerable rapidity.'

Interurban Lines Profitable

In general the committee referred to in the preceding paragraph finds that buses will be used chiefly as feeders and to supplement railway operations. Only in small cities does there appear to be any intention of supplanting street cars with buses. Interurban operations seem to be generally more profitable than city service. Urban operations on a five-cent fare are almost uniformly unprofitable, according to the committee, a fare of eight and more probably 10 cents being required to show a profit.

This committee also finds that bus competition has been substantially checked in city operations but less progress has been made in meeting interurban and interstate competition. In connection with independent operation, it was found that the independents are holding on and, when their equipment is worn out, are able to make replacements.

A substantial majority of those reporting to this com-

mittee exonerate the bus manufacturers from the implication of undue efforts to establish independent competitive operations. A few, mentioning five bus manufacturers in all (who are not named in the report), feel that the latter have not shown indications of sincere cooperation and have lent financial assistance considerably beyond the general practice of extending time payment accommodation to establish independent competitive operations.

Three Unconventional Designs

Returning to the exhibits, three makers—Twin Coach, A. C. F. and Versare—showed unconventional designs providing a considerable increase in carrying capacity over anything that has been obtained in conventional single deck types. In all three of these models the driver sits at the very front of the vehicle and the frontal appearance bears considerable resemblance to street car practice. In each case, the frame is incorporated in the body and the power plant and transmission is mounted so that the entire length of the vehicle is available for passengers. The combined seating and standing capacities of these models averages about 75 and gross weights, unloaded, range from 7 to 8 tons.

In the A. C. F. model, the powerplant is located on the right side just aft of the front wheels. It is housed in a metal compartment beneath two double transverse seats placed back to back. In the Versare, which is a six-wheel type, gas-electric drive is employed. The engine and generator are in a unit assembly which is mounted transversely in a compartment at the rear of the body. Individual motor drive is provided for each of the rear axles. The Versare body is of all-duralumin construction. The Murray Corp. of America also showed an all-duralumin body designed for the conventional bus chassis. It had a very attractive appearance and, of course, makes possible a considerable saving in weight.

The new Reo, Studebaker and Graham Brothers sixcylinder bus chassis had their first national showing. New six-cylinder engines were exhibited by Hercules, Waukesha and Continental, the new Continental model being of the pushrod operated, overhead valve type. More complete descriptions of the new products at the show will appear in the November number.



Drivers and owners of all makes of trucks are invited to attend the International Harvester School of Peoria

Rear Springs Changed

It's Being Done Even on Heavy

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Below: Balancing a spring over an axle and guiding it into place. The front of the spring is held by another mechanic

SPRING changing is an operation which is looked upon as a necessary evil in many shops. The work is hard and unpleasant and is assigned to helpers or junior mechanics and the equipment used often corresponds with the prevailing opinion concerning the job.

This attitude is in contrast with that of owners who see in a broken spring something which prevents a vehicle from earning money until the spring is repaired or replaced. Action is required to satisfy the needs of owners and to curb their impatience with any delay.

A reduction of one-half in the time required to change a spring has been achieved by many shops where a study has been made of the work and others have succeeded in cutting the time to one-third. Two rear springs of heavy duty dump trucks are changed in 1½ hours by two men in a shop specializing on spring work. A small dealer's shop reduced the time from six to four hours by a change in method.

There is an opportunity for profit in spring service if the shop is equipped for the work and uses up-to-date methods. Flat rate prices for changing springs have increased the profits of many shops because they are able to turn out the jobs quickly and customers are willing to pay a reasonable price made known to them in advance.

Loose spring clips, overloading and lack of lubrication are the three chief causes of spring breakage, according to the statement of several service station executives. Breaks in the center are due to loose clips and breaks near the eyes are caused by frozen shackles or bolts. When a spring is changed because of neglect the owner may well be shown the reason for the trouble and the remedy.

Husky wrenches are essential for spring work. Clips

are usually rusted and short-handled open-end wrenches are inadequate. Both heavy duty open-end wrenches and socket wrenches are used for spring work and in most cases both types of wrench are used on each job. Long handled L socket wrenches are also used and are of particular value for the final tightening or preliminary loosening.

Speed in changing springs depends to a large degree upon the means provided for raising and supporting the frame and axle. Flimsy jacks intended for light passenger car work and insecure wooden blocking cause a direct waste of time and put mechanics in constant fear of injury in case "something lets go." When both springs, at front or rear, are removed at the same time support of the frame is most important.

A combination of lifting jack and adjustable non-lifting jacks or "horses" is frequently used under frames. The lifting jack is placed under one side of the frame and this member raised until the adjustable jack is placed under it. After the operation is repeated the frame is supported on two jacks. A movable garage jack is used to raise the axle to relieve pressure on spring bolts.

in 90 Minutes

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Duty Trucks in Properly Shops

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James W. Cottrell

Chain hoists can be used to advantage for raising and supporting frames during change of springs. An extra chain and ring is passed through the frame and it is raised or lowered as required.

The job can be made easier by using two hoists, one on either side. By working the hoists together the frame can be raised or lowered any amount desired and by raising one hoist more than the other it is possible to swing the frame to one side in order to line up the spring and spring brackets. All of the space beneath the chassis is free when hoists are used.

Some elevation of the wheels is very desirable for spring changing. There is very little room beneath the axle and springs and mechanics are forced to work in positions which not alone are uncomfortable but prevent full strength being used. Underslung springs do not detract from the need for more room for mechanics.

A few inches more room makes quite a difference to mechanics and a pair of heavy timbers with an incline at one end may be used to gain this amount. Ramps are helpful for this purpose provided some support for the jacks is available.

Channel iron tracks and a two-level floor are used in the Philadelphia branch of the Eaton Bumper & Spring Service Co. The floor under the tracks is 3 ft. lower than the main floor and there is space all about the trucks on the channels so that men may work to advantage on any spring. Two chain hoists are used on each vehicle and wheels and axle remain stationary in the tracks. A light cross channel iron which may be moved about at will is used to support the spring while it is being placed in position.

Soaking the clips and nuts with oil is the first step in removing springs. Two men pull on the wrench in unison to remove the nuts. To drive out the clips a mawl

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APROPERLY equipped shop can change springs so quickly that owners are willing to pay a price which gives a good profit.

Spring changing which is hated by mechanics in many shops because of the uncomfortable position in which they must work can be made much easier by study of procedure and selection of equipment.

Methods used by successful shops are described in this article.

of special shape is used. This tool has a head like a machinist's hammer with the other side shaped somewhat like a drift pin. Clips are driven until flush with the axle with the head and are forced further by the point which is driven by another hammer.

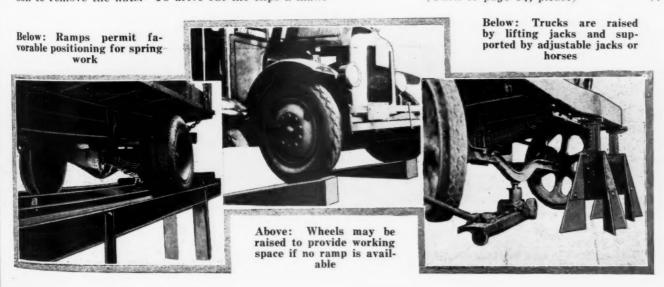
In general a spring is detached from the axle and then from the brackets. In replacing springs they should be attached first to the frame bracket and shackles and then to the axle, according to B. C. Ulrich of the Eaton service station. Underslung rear springs are removed by detaching the U-bolts, then the rear shackles and finally the front bracket.

Much care is required in handling heavy-duty truck springs. The weight runs up to more than 300 lb. and serious injury to a mechanic may result if one of these springs is dropped accidentally. A safe method of handling such springs is to put a bar through each eye of the spring and have three men lift it into place.

A service manager found that moving an underslung spring beneath the axle on a dolly did not work out in practice as it did in theory. It was easy to move the spring about on the dolly but it frequently upset sideways just as it was about to be fastened in place. Springs are now "towed" in place by a rope carried forward to the front of the radiator. These springs are attached to the front bracket first and raised by a bar to contact with the rear axle.

Periodic tightening of spring clips is a service which

(Turn to page 34, please)



Shippers Own 82% of Trucks

N. A. C. C. Analysis Shows Common Carriers Represent Only 7 Per Cent of Registration

RANSPORTATION by motor truck is shown clearly to be an unorganized enterprise of about two million individuals and business concerns, according to estimates now made public by the National Automobile Chamber of Commerce, and based upon traffic survey studies by the United States Bureau of Public Roads.

Only 497,000, or 18 per cent of the 2,764,000 motor trucks now in use are classified as commercial carriers in the business of hauling for hire.

11 Per Cent Contract Carriers

Of the 497,000 trucks engaged in hauling for hire 304,000, or 11 per cent of the entire truck registration in the United States, are classified as contract carriers. Trucks in this group are owned by individuals and concerns who make one or several definite contracts to haul goods between specified points at predetermined rates.

Some 193,000 trucks, or 7 per cent of the nation's registration, are listed as common carriers. These trucks are owned and operated by almost 100,000 individuals and companies to haul goods for the general public. Less than half of them are used over regular routes between fixed termini and at regularly established tariffs.

About 41,000, or $1\frac{1}{2}$ per cent of the national truck registrations, are classified as interstate common carrier trucks.

Transportation by motor truck in the United States, existing as a local distribution system unparalleled in history over more than 3,000,000 miles of highways, thus differs materially from other transportation industries. In the early days of canals, river, lake and ocean lines, steam railroads and electric railways, many indi-

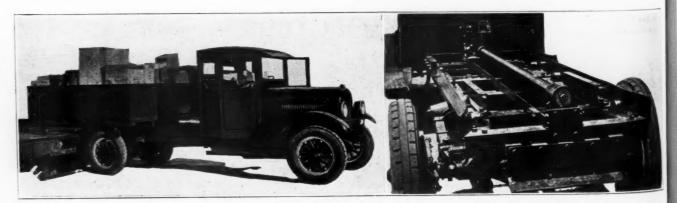
vidual transportation companies were formed. In every case, however, consolidations came early in the history of the industry, and while a few small companies remain, the bulk of the business gradually fell into the hands of comparatively few strong companies.

The use of trucks, on the contrary, has been almost completely controlled by shippers who own their own trucks or contract for truck service with a competent truck company or individual. After 25 years of development of the truck industry we find some 2,267,000 trucks, or 82 per cent of the entire number owned by shippers themselves. Of the 18 per cent remaining, only 7 per cent, or 193,000, are in use by transportation concerns rendering general trucking service.

278,000 Fleet Owners

There were 278,000 owners of two or more trucks in the United States on January 1, 1927. The National Automobile Chamber of Commerce estimates that this group of fleet owners owned slightly less than 1,000,000 trucks. This leaves more than 1,764,000 owners of one truck and indicates that more than 2,000,000 individuals or business concerns are engaged in truck transportation, at least to the extent of owning one or more trucks.

Whether trucking service by transportation companies will ever be developed to a point of efficiency sufficient to induce shippers to abandon their own trucks in its favor is a problem of keen interest to transportation economists. The great popularity of the truck has been due largely to its flexibility and speed—advantages which are lost when control of the transportation medium through ownership is given up.



Dee Dee Automatic Demountable Unloader, invented by Austin Denehie, of Los Angeles. It consists of a frame bolted to a truck chassis, a longitudinal shaft with compound thread, a power take-off assembly and a special body. The body built as a separate unit has swivel castors on the bottom to permit platform movement. The shaft is driven through a power take-off controlled from the cab

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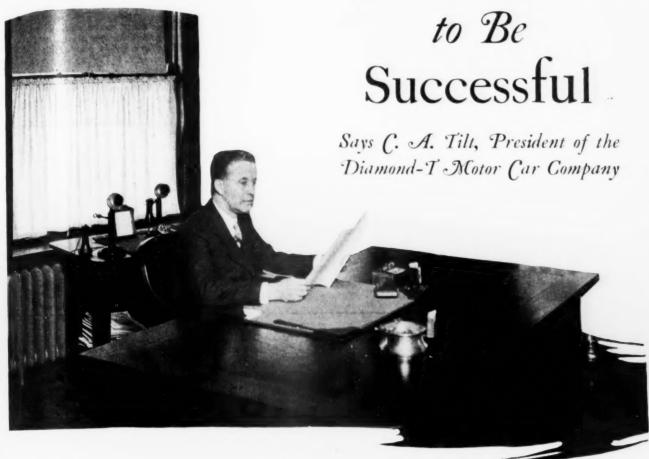
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Know Each Prospect's Needs



C. A. Tilt, president of the Diamond-T Motor Car company, Chicago

To make money today, dealers in the truck business must be more than representatives. They must have the ability to study their local transportation problems. They must be able to give sound, sensible advice. They must be able to maintain a repair or service department where work is done 100 per cent satisfactorily. They should carry in stock an ample supply of parts in order to take care of the operator quickly and reasonably. They must consider foremost that a customer's truck laid up for repairs or overhaul is costing that customer money."

Behind this statement of C. A. Tilt, president of the Diamond-T Motor Car Co., is the authority of experience in building up a truck manufacturing and merchandising business that is among the seven leaders in the industry today. Twenty-two years ago the Diamond-T Motor Car Co. was founded with \$1,000 capital. On Dec. 31, 1926, it tied for sixth place among heavy-duty truck manufacturers who are members of the N.A.C.C. At no time in this period of nearly 22 years has the company ever been reorganized, Mr. Tilt has never relinquished active management, nor has money been borrowed to "carry on the business."

Continuing Mr. Tilt said: "There are too many dealers today who merely represent. If some prospects want a passenger car, they'll sell it. If another wants a truck they'll sell him one. Many of them will do a repair job with no other thought than to 'get the truck running.' I know that won't do. When I started building trucks there were already several truck factories and direct factory branches in Chicago. My customers

were naturally approached by competitive truck salesmen. These salesmen attempted to give long detailed stories to the prospects, but they seldom got very far. Diamond-T customers knew that I was honest with them, and frequently told a competitor—Tilt worries about that for me. In other words I knew their individual problems. I knew their hauling requirements, their merchandise, their routes, their drivers, and everything I could possibly learn about their business, and it held customers for me. Today there are many Diamond-T owners who bought their original equipment from me when we manufactured Diamond-T trucks many years ago. To be a successful dealer—successful because he is making money—he must bear all of these things in mind."

At the age of 19, Mr. Tilt entered the employ of his father, J. E. Tilt, one of the best-known shoe manufacturers in the country. His first job was sweeping floors and making himself generally useful. As he picked up experience in the shoe business he went out on the road, selling, and his success as a shoe salesman is a matter of definite record.

His father was frequently called out of town on business, in which event C. A. usually managed the entire plant and took full charge of production. During one of these trips C. A. Tilt established the highest production figure in the history of the J. E. Tilt Shoe Co.

All of the time C. A. Tilt was in the shoe business (Turn to page 30, please)

C. C. J. Shop Ideas

THIS page is designed primarily to help service station repairmen in exacting economies in time, labor and money. Salesmen, however, can also profit by scanning over these practical hints.

The average buyer today is more conversant with the important details of truck operation and maintenance than ever before. A money-saving idea will often result in a sale.

Readers have secured many valuable suggestions from the series of ideas published. We want more useful hints and will pay \$5 for each new idea accepted. Give exact dimensions of parts to be made to enable other readers to duplicate the device.

No. 156. Packing Ball Bearings

Packing ball bearings with grease after cleaning is simplified by mounting a high pressure grease gun in brackets and feeding the grease in the bearing with the end of the flexible tubing. The bearing should be placed on a clean piece of paper and the spaces between inner and outer races filled with grease as it emerges from the tubing. The bearing can be carried in the paper without smearing bench or mechanic's hands. A lubricator must be inserted in the nozzle of the tubing on some systems to permit discharge of grease.

No. 157. Portable Lamp Cord Support

An easy means of supporting a portable lamp cord out of the way when work is being done beneath a chassis is provided by three or four battery clips attached to the cord by metal strips or eyes.

The clips are spaced on the cord by tape at intervals of about 18 in. The clips are attached to brake rods, crankcase, brackets or any convenient parts, keeping the cord off the floor and away from creeper wheels or interference with parts and tools. The plan will be found much more convenient than the usual one of threading the cord through various parts or pulling it about on the floor.

No. 160. Frame Riveting Dolly

The frame riveting dolly shown was made from a section of axle shaft. It was cut off the proper length leaving the threaded end intact. Two holes were drilled at right angles through the shaft to permit it to be turned with a punch. The end opposite the threaded position is slightly countersunk to receive the rivet head. A standard axle nut is used in reverse position. limited range of adjustment is provided by the nut and thread. Further adjustment may be made by using washers, or a flat bar under the nut.-Ralph Welch, Afton, Iowa.

No. 159. Drill for Close Quarters

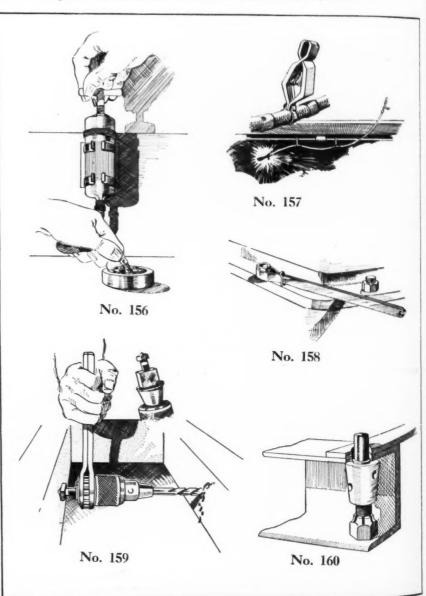
A ratchet wrench handle, ½ in. drill chuck and hub made in a machine shop form the drill for work in close quarters illustrated. The top of the hub is made square to fit the opening in a ratchet

wrench handle. The bottom is turned to a Morse taper to fit the drill chuck. A hole threaded to fit a 5/16 in. cap screw is provided in the center of the hub. A cap screw with the head pointed and hardened is used as a feed when heavy pressure is required, the screw being turned with a wrench.—Wm. A. Loos, Pittsburgh, Pa.

No. 158. Small Part Holder

Two hack saw blades form the holder on cylinder block studs. for small parts shown in the sketch. ker, New Bedford, Mass.

One end of each blade is heated red for a distance of about 2 in. and then bent to fit on three sides of a hexagon nut. The blades are joined by a wire ring and the opposite ends brought together by a cotter pin. The saw edge may be ground off on a power grinder. The device is intended to be used for inserting nuts in inaccessible places such as around exhaust manifolds and on cylinder block studs.—Ralph A. Parker, New Bedford, Mass.



Commercial Car Journal

Flat Rate Price List

Timing Gears and Chains and Flywheel

Definitions of Repair Operations

TIMING GEARS AND CHAINS

- 1. Adjust timing chain.
- 2. Retime valves.

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- 3. Renew all chains or gears.
- Chain and sprockets renew after timing case cover has been removed.
- Timing gears renew after timing case cover has been removed.

FLYWHEEL

- 1. Tighten flywheel after clutch has been removed.
- 2. Remove and reinstall flywheel.
- Remove and reinstall flywheel after clutch has been removed.
- Starter ring gear renew after flywheel has been removed.

		Timing	Gears and	Chains			Flyv	vheel	
	1	2	3	4	5	1	2	3	4
Brockway R & T			\$15.00		\$6.00	\$1.50	\$21.00	\$3.00	
Brockway SK.			15.00		6.00	1.50	21.00	3.00	
Brockway EY	\$7.50	\$7.50	15.00	\$7.50		1.50	21.00	3.00	2.1.8
Chevrolet 1 ton		4.25	6.40		4.15	.75	6.00	2.00	110
Dodge Bros. 3 brg.	.75	6.00	(a) 12.75	1.00	12.00	.90	13.75	2.50	
Dodge Bros. 5 brg.		6.00				.90	11.50	2.50	3.60
Ford 1 ton		3.50	12.00		9.00	1.50	14.50	1.50	2.00
F.W.D.		2.25	15.00		13.50	.75	5.25	1.50	4.50
Garfield 100-80						1.50	10.25	3.00	1.50
Garford 50-30-20						1.50	10.25	3.00	1.50
G.M.C. T-20		5.65	8.50		5.50		13,50	6.50	
G.M.C. T-40 & T50		5.65	8.50		5.50		13.50	6.50	
Graham Bros. 4 cyl.		6.00				.90	11.50	2.50	3.60
Inter. Harvester S-24		5.25	7.75		3.00	1.00	5.25	1.50	3.75
Inter. Harvester S-26		5.25	7.75		3.00	1.00	5.25	1.50	3.75
Mack AB		1.20	13.10		3.30	1.35	11.40	1.50	
Mack AC		1.35	16.35		3.30	1.35	12.75	1.50	
Pierce-Arrow X		10.50	21.75		12.75	1.50	17.25	3.75	5.70
Pierce Arrow W & R		11.25	22.50		12.75	1.50	19.20	3.75	5.70
Pontiac (b)		5.50	5.50	5.00	1.00	.75	6.50	11.00	
Reo T-6	*.	6.00	13.00		8.00	1.50	11.00	4.50	
Reo Speedwagon, Jr.	1.00	7.50	9.50	3.50	3.50		10.50	1.25	
Star Four	.50	4.00	3.90	1.60	.50		5.25	2.05	
Star Fleetruck	.50	5.50	5.30	2.00	.80		6.50	3.30	
Stewart Buddy			7.00	4.50	2.00	1.00	10.50	5.50	
Studebaker 3/4 ton	.40	12.50	12.50	3.60	1.75	1.60	12.50	3.25	

(a) Starter chain only.

(b) G.M.C. De Luxe Delivery.

New Truck Models of the Month

Graham Brothers

FOLLOWING the recent introduction by Graham Brothers of a line of six-cylinder trucks, announcement is now made by this division of Dodge Brothers of a new line of six-cylinder buses. The new line consists of a 12-passenger parlor coach listing at \$4,045, as 21-passenger street car type selling at \$4,060 and a 16-passenger parlor coach listing at \$4,290.

In addition to the six-cylinder engine, a four-speed transmission, hydraulic four-wheel brakes, cam and lever steering gear, and a new type of rear spring design feature the new models. Higher speed and generally improved performance have been the main objectives in the new design, while comfort has been given attention in better distribution of weight and a new type of seat design.

The line supersedes the four-cylinder Graham buses produced during the past seven years. Bodies and chassis are being manufactured by Graham

Brothers. All models are mounted on a 162-in. wheelbase. A larger proportion of the weight than usual is carried over the front axle, enabling the use of a relatively short wheelbase. Rear overhang has also been re-

Powerplant design follows closely on that "sed in the Dodge Senior Six passenger car line and the Graham Brothers six-cylinder trucks. The four-

speed transmission is also practically identical with that used in the sixcylinder trucks. Rear axles are of the bevel gear conventional type. Parlor coaches have a standard rear axle ratio of 5.667 to 1, with a reduction of 6.375 to 1 on the street car type. Optional

ratios are available on all models.

An interesting rear spring design has been worked out for the new buses. It consists of two superimposed semielliptic springs fastened to the frame by the same bolts and shackles and so arranged that the secondary upper

spring comes into operation after the primary spring has deflected been certain amount. Moreover, the rubber stop pads on the frame for the upper spring are so arranged that one end will strike the stop pad first, leaving the other end of the spring to act as a

short cantilever spring for further deflection. Through this design, a grad-built engine and Lockheed hydraulic ually increasing spring stiffness is obtained with increasing deflection.

Body design in the 12-passenger parlor coach incorporates the use of individual seats with overstuffed air cush- 21% sq. in. Lubrication is full force-



THE Velie Motors Corp., Moline, Ill., recently brought out a 11/2-ton speed truck designated as Model 40, which has a rated speed of 50 m.p.h. With a 134-in. wheelbase chassis this model



Views of the new slip-on body for Chevrolet roadster or coupe manufactured by Hercules



Products, Evansville, Ind.

is featured by a six-cylinder Veliefour-wheel brakes.

The crankshaft of the valve-in-head engine is extra large and heavy, weighing 92 lb. and has a bearing area of

feed to all moving parts. Other engine accessories include an oil filter and gasoline purifier. The transmission provides three speeds forward and one re-

The frame, specially designed of pressed steel channel, seven inches deep, is claimed to permit of a low-hung chassis and provide an extra degree of strength. Springs are of chrome vanadium steel and

rebound is absorbed by Stromberg shock absorbers.

The brakes are of the internal type and the drums, 16 in. diameter, are protected against the effects of water. A heavy type Ross steering gear is employed. A coupe type driver's compartment is an integral part of the front structure.



New Velie is featured by a six-cylinder engine and fourwheel brakes

ions and deep springs, the seats being set at an angle to the body sides. A similar design is used in the 16passenger coach which has four double seats along the left and four single seats to the right of the aisle, with a four-passenger cross seat at the rear.



Exterior of the new 16-passenger Graham Brothers parlor coach and interior of the new 12-passenger club coach

Schacht

THE LeBlond-Schacht Truck Co., Cincinnati, Ohio, has just added a new model to its truck line. It is a two-ton, six-cylinder truck built along Schacht principles of design and construction.

It is powered by a 3% in. by 5 in. six-cylinder Wisconsin engine developing 75 hp. at 3000 r.p.m. The engine is of valve-in-head construction with force feed lubrication to rocker arms and valve stems as well as to all bearings. The oil is forced by a gear pump through a hollow crankshaft. Ignition is by Bosch high tension magneto, and

(Turn to page 24, please)

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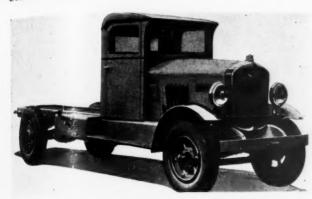
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New Selden an adaptation of the Roadmaster Model for oil field operation

Selden

THE new Selden "Special" Roadnounced by the Selden Truck Corp.,
Rochester, N. Y., is an adaptation of the
regular Roadmaster model to provide
greater endurance and stability required by oil field operation. The lines
and general appearance of the "Special"
remain the same as the regular Roadmaster, the changes having been made

in the mechanical construction only. This model is also recommended for hauling "3 - b a t c h loads" in road building service.

Obtainable in two wheelbases, 165½ in. standard and 180½ in. long, the "Special" has a capacity of 4 tons and a speed of 30 m.p.h. direct and 37 m.p.h. overdrive.

The following details pertain to the changes only, otherwise the specifications conform to those of the regular Roadmaster model.

The powerplant is a six-cylinder, 4% in. x 5¼ in., 86 hp. engine with removable head and seven-bearing crankshaft. A dual range transmission is used giving seven forward speeds and two reverse. The fourth speed in the high range is an overdrive increasing the truck speed 25 per cent without increasing the engine speed. Power takeoff is provided through an auxiliary transmission. This arrangement permits driving the winch in any of the nine transmission speeds and also permits driving the truck while operating the winch.

Power is transmitted from clutch to transmission through a Spicer 7½ in. cushion universal, from transmission to auxiliary transmission through a Spicer 8½ in. long life cushion universal, and from auxiliary transmission to rear axle through a large diameter tubular shaft with metal universal.

Final drive is through a double reduction rear-axle with single expanding brakes in cast steel drums. This axle has 3000 lb. more carrying capacity than the regular Roadmaster axle.

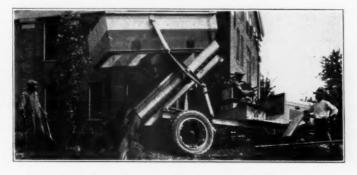
A larger front axle is used. It is drop forged "I" beam alloy steel with Timken bearings.

The radiator is of the fin and tube type but of heavier construction with cast iron or polished aluminum shell. It is protected against vibration and strain by rubber cushions.

Heavier springs are used both front and rear,

with a special helper spring on the top of the rear springs. They are semi-elliptic type, 40 in. x 2½ in. with 11 leaves in front and 56 in. x 3 in. with 15 leaves in the rear main. The auxiliary spring is 3 in. wide and consists of three leaves. Radius rods and brackets are also of heavier construction.

A rolled steel channel front bumper is standard on this model. Steering is through Ross gear of the cam and lever type.



Batches discharged from the new Hug body are automatically mixed

Hug

A NEW body of the dump type for hauling wet concrete, has just been introduced by the Hug Company, Highland, Ill., that remixes the batch in the dumping process. The operation of the body is automatic. As the body is raised with a 6 in. hydraulic power hoist, operated directly from the driver's seat, the entire body shell is elevated by toggle arms in such a manner that the batch in falling through

rigid cross members of the body, is remixed in the process of of dumping. The wet concrete is discharged at the rear of the body in the usual manner. It is designed for use in connection with Hug "88" Roadbuilder.

Indiana

A SIX-CYLINDER 4 to 5-ton chassis, designated as Model 638, has just been introduced by the Indiana Truck Corp., for oil field service. It is offered in three wheelbase sizes, namely, standard, 168½ in.; long, 192½ in., and short, 156½ in. With solid tire equipment it is rated at 20 m.p.h., and with pneumatics 30 m.p.h. Standard gear ratio is 8¾ to 1 with optional ratios of 10 1/3 to 1, or 12 to 1.

The six-cylinder 4 by 5 powerplant is of the valve-in-head type with cylinders and crankcase cast in block. The lower pan is aluminum casting and is used as an oil reservoir only. Lubrication is full-force feed, oil being forced to all bearings by a gear pump; an oil lead also lubricates all rocker levers. Cylinder head is covered inclosing rocker arms, valves, stems, etc., with an oiltight cover. It has a power output of 78 hp. at 2000 r.p.m.

The cooling system includes a centrifugal pump, and 20-in. four-blade fan and a fin and tube type radiator with removable cast top and bottom. Ignition is by high-tension magneto with impulse starter, driven by pump shaft.

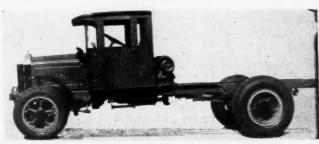
Gasoline is fed by vacuum from a 25-gal. tank under seat, to a 1½-in. plain

tube carburetor. A hot spot manifold is employed.

Power is transmitted through a dry plate clutch to a two-range amidship transmission supported flexibly at three points. It provides seven speeds forward and two reverse. The propeller shaft is in two sections with fabric universal joints between engine and transmission and metal between transmission and rear axle. Final drive is through a worm drive, full-floating type rear axle. Brakes are internal and act on

3% by 21 in. rear drum. They are controlled mainly by foot pedal, but the pull rod brake mechanism is set so that they can also be operated by hand lever. Cam and lever type steering gear with 20-in. hand wheel is used.

The frame, which is of heat-treated pressed steel channel section, 7 in. deep, 3-in. flange, 5/16-in., is supported by four semi-elliptic silica manganese steel springs. The front springs are 40 in. by 2½ in. with twelve leaves and the rear 50 in. by 3½ in. with 16



Six-cylinder, 4 to 5-ton Indiana Model 638 for oil field service

TI

leaves. All spring eyes are bronze-bushed.

Metal wheels are standard, equipped with 36 x 5-in, solids in front and 36 x 12-in, solids in the rear. Special pneumatics can be secured at extra cost.

Standard equipment includes Moto Meter, seat, fenders, raidator guards, bumper, Prest-O-Lite equipment, tow hooks, mileage record, air cleaner and tools. The cab is furnished at extra cost.

Graham Brothers

THE introduction of a half-ton panel delivery model is announced by Graham Brothers. This model has an allowable speed of 40 m.p.h., a 5½-ft. loading space and lists at \$770 complete with body.

The chassis, while designed by Graham Brothers, has been developed on the basis of the Dodge Brothers four-cylinder line with a view toward interchangeability of the major units with those on the Dodge Four. The engine with its bore and stroke of $37_8 \times 4\frac{1}{2}$ in. is identical with that used in the Graham Brothers 34-ton truck and is assembled in unit with a three-speed transmission and single-plate dry clutch. Wheelbase is 108 in. Tires are 29×5.00 heavy-duty 6-ply balloon front and rear on wood wheels. Road clearance under the semi-



Rear view of the new ½-ton Graham Brothers delivery model

floating bevel gear 3.769 to 1 reduction rear axle is 8 in. A worm and sector steering gear is standard, with a 38½-ft. turning circle diameter. Ball bearing are used at the steering pivots on the drop-forged I-section front axle. A foot pedal actuates external contracting rear wheel brakes, having a drum diameter of 14-in. and using 2¼-in. lining. A propeller shaft brake with a drum diameter of 6¼ in., using 2½-in. lining, is actuated by a hand lever.

Springs are semi-elliptic all around, $37 \times 1\%$ in. and 54×2 in. for front and rear respectively. The frame is of pressed-steel channel section, 5 in. deep, 2-in. flanges, and $\frac{1}{2}$ -in. stock.

Body framework is of hardwood cross sills, uprights and top ribs. Body sides are constructed of composition board covered with sheet metal with padding in between to eliminate rumble. A single full width door with two rear windows in the upper portion is provided in the rear. Doors in the driver's compartment are equipped with crank-operated drop-windows. Because of the bucket type driver's seat construction, a maximum length of floor space of 107½ in. is given. Inside width between wheelhouses is 42¼ in. with 48¾ at the belt line. Inside height is 42½ in.

Schacht

(Continued from page 23)

carburetion by Zenith.

The gears of the four-speed transmission are of nickel steel with heavy chrome nickel shafts supported by annular ball bearings. Drive is taken through flexible, ball-jointed radius rods. The frame is of pressed steel section 3 in. wide, 6 in. deep, ¼ in. thick. The wheels are of cast steel with solid tires.

Goulds Car Washer

Goulds Pumps, Inc. Seneca Falls, N. Y.

THREE air chambers are embodied in the construction of this car washer one each on discharge, suction and the pressure regulator. The pump is a single cylinder double-acting inside packed type with one stuffing box. Drive from the electric motor is by means of a belt with floating tightener, an enclosed set of spur gears with crankshaft and connecting rod. Splash oiling is used in the pump drive.



The pressure regulator is arranged to bypass the pump when pressure in the discharge air chamber reaches 360 lb. There is a check valve at the base of this chamber which cuts it off from the pump at this time and the motor and pump work against approximately 30 lb. pressure when bypassing. Provision is made for the admission of compressed air into the discharge air chamber resulting in greater

cushioning of discharge and extending the cycle of operation of the pressure regulator.

The one-gun washer is supplied with a 2 hp. motor and the two-gun with a 3 hp. unit. Suction and discharge hose and nozzles are supplied as standard equipment with either outfit.

Standitall Radiator

J. C. Black Mfg. Co., Inc., Oil City, Pa.

THE separators or dummies on this radiator are narrow strips contacting with the waterways in the front and back only. The construction allows that portion of the waterways which carries the water to be reached by a forced draught of air through their entire length. This construction, together with the patented shape of the waterway itself, is claimed to allow for



Bound by Front Section

expansion in the event of freezing. The maker states that the radiator may be frozen repeatedly without damage. It is made for trucks and buses as well as passenger cars.

One Gun Paint Spray Unit

United States Air Compressor Co. Cleveland, Ohio

THE PSE-11 unit illustrated consists of a 3 by $3\frac{1}{2}$ in. single cylinder air-cooled compressor, automatic unloader, $1\frac{1}{2}$ hp. motor, tank 12 by 36 in. with fittings all mounted on a steel base. Displacement is



8 cu. ft. of free air per minute. An unassembled unit is furnished which includes all the items above except the base, motor rails being supplied for mounting the motor on plank or floor.

Franklyn Drain Plug

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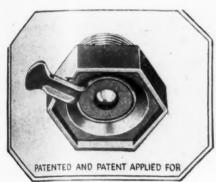
motor

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Franklyn Mfg. & Sales Co. Long Branch, N. J.

THIS plug has a quick opening valve which makes it possible to drain crankcases without removing the plug. Opening and closing are accomplished by movement of a lever on the side. The

used as a T wrench. It may be also used as L wrench with hand support. The sockets are heat-treated and electric butt welded to stock. A half inch square broached at center of handle adapts it for use with standard interchangeable extensions or lugs. Sizes range from 3% in. to 7% in. hexagon. The price is \$2.50.



Lever opens drain

plugs which are intended to replace plain plugs, are available for Fords at \$1.50 retail and \$3.50 for Dodge Bros. engines, with other models to be ready soon.

Eccentric Bearing Tie-Rod

Thompson Products, Inc. Cleveland, Ohio

THE vertical socket design of the new tie-rod reduces the distance from the ball stud to the end of the rod to ½ in. compared with an average of 1½ in. in horizontal sockets. This feature is said to be of much value in four-wheel brake design.



Showing vertical socket and eccentric bearing principle

The ball stud bearing consists of two eccentric half-bearings the smaller ends of which are forced together by a U-spring providing an automatic take-up.

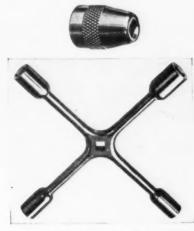
Adjustment for toe-in is provided by right and left threads on the intermediate member.

The new tie-rod was developed at the Detroit plant of the company and was adopted by one manufacturer before formal announcement was made by the Thompson company.

Universal Rimrench

Blackhawk Manufacturing Company Milwaukee

DESIGNED to accommodate any rim nut job, whether wood, disk or wire wheel is the purpose of the No. 5204 Deep-4 Universal Rimrench. Unusual depth of sockets allows easy access to tire carrier nuts regardless of long stud projecting through nut. Because of the length of the handles good leverage is afforded when

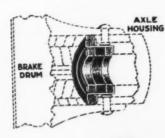


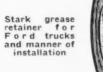
Views of the socket and T wrench

Stark Grease Retainer

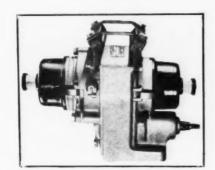
Stark Metal Works 1644 Tower Grove Ave., St. Louis, Mo.

THE above company is now producing its rear-axle grease retainer, formerly made for Ford passenger cars exclusively, in Ford truck sizes as well. The truck size lists at \$1 apiece.







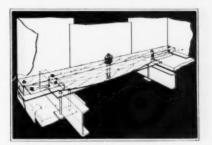


North East Battery Unit adopted by the White Company for its model 54 six-cylinder bus. It is of the heavy duty dual type with two distributors and two coils furnishing two sparks to each cylinder

Flexible Cab Mounting

Highland Body Co., Cincinnati, Ohio

A FLEXIBLE mounting for cabs has been developed by the above company. The cab is bolted rigidly to the dash and is supported at the rear by the sill which is cut on an arc and is held in contact with an angle iron cross member by a bolt and heavy coil spring. The side



Phantom showing new flexible cab mounting developed by Highland

sills of the cab are not in contact with the frame side members and weaving of the frame is not transmitted to the cab.

The assembly which is designated as the rocker sill mounting was designed to meet present-day conditions of higher speed, longer distance operation of trucks.

Spiral Expansion Reamers

Hanlon & Wilson Wilkinsburg, Pa.

REAMERS with spiral blades and onesixteenth inch expansion for reaming piston pin holes in connecting rods and pistons is being offered by the above company. In addition these reamers are equipped with a conical pilot that centers the reamer holes of variable diameter within



Adapted for reaming grooved holes

the range of the reamers. They are produced in standard sizes ranging from % in. to 2 in. and varying by 1/16 in. They may be obtained without pilots and for machine reaming with either straight or taper shanks.

Videx Prospect Record

Irving-Pitt Mfg. Co. 68 34th St., Brooklyn, N. Y.

A PROSPECT record for office and salesmen's use is provided in compact ferm in the Videx No. 1 outfit which consists of 400 printed sheets, master index, sub-index, and binder. Eighteen rings are contained in the binder and the sheets may be positioned as desired for indexing purposes.

Enginite

Industrial Refining Co. 1476 Broadway, New York, N. Y.

THIS product is offered for use in engine cooling systems to be added to the water. It is claimed that it will dissolve rust, dirt and scale and prevent formation of deposits in the jackets and radiator. It is sold in cans at \$1 each.

By a vote of the directorate the National Automobile Chamber of Commerce has included traffic relief in its platform and a program to make it effective.

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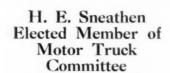
Have You Heard That —

WHILE the Ford delay has accentuated a normal slowing down of seasonal sales in the retail passenger car field, truck business generally is maintaining a satisfactory sales level as indicated by the following sectional reports: New York reports sales in the lower capacities as on a good seasonal basis, but with heavy duty sales slightly below last year's level. Boston truck men say sales have not dropped off but are very optimistic for the rest of the year. Truck sales in Atlanta were proportionately larger than last year which has been the case for almost every month since the first of the year. Light truck sales are reported as being good in Denver due to beet delivery; heavy trucks, however, are Dallas reports betterment of truck sales in the rural districts over last month. Both Seattle and Los Angeles point to general improvement in truck sales. Good crops and rapid movement of grain in the northwest are said to be responsible for improved conditions in this section. The sales outlook in South Dakota and Montana, which were dubious states due to a long dry period, is now reported very promising.

Total shipments of Graham Brothers 112 and 2-ton trucks exceeded the two thousand mark September, 1927. Compared with August the September sales record represents a 38 per cent increase. Sales shipments of all Graham Brothers vehicles totals 5107 in September, an increase of 17 per cent over August.

THE tentative program for the Thirteenth Annual Convention and Ninth Annual Exhibit of the Automotive Equipment Association, to be held November 7 to 12 in Chicago, was recently released. The opening day will be featured by the annual election and a dinner in the evening for small tool manufacturers. The second day

will include the second general session at which the Greater Development Market of the A. E. A. will be presented. Wednesday manufacturers and jobbers will hold separate sessions, the former at the Coliseum and the latter at the Stevens Hotel. That evening the Over-Seas annual banquet will be held at the Stevens.



Howard E. Sneathen, director of commercial car and truck sales, Dodge Brothers, Inc., was elected a member of the Motor Truck Committee of the National Automobile Chamber of Commerce at a recent directors' meeting.

Expansion of the Committee was started this summer with the addition of R. G. Hayssen, president of the Sterling Motor Truck Co., and W. C. Parker, manager of commercial vehicle sales, Reo Motor Car Co., as members.

ADMINISTRATIVE activities of the Relay Motors Corp. will be centralized at the newly acquired plant of the Garford Truck Co., in Lima, Ohio, according to G. L. Gillam, president and general manager. The company plans to continue with the manufacture of Commerce trucks, Garford trucks and buses, Service trucks and Relay trucks, at both the Wabash and Lima plants.

Elmer J. Johnson has been appointed head of the San Francisco branch of the Federal Motor Truck Co. Mr. Johnson was formerly president of the Seattle branch. He will be succeeded at this branch by N. Long.

E XPORTS of trucks and buses for eight months ending August, 1927, totaled 72,179 units valued at \$46,585,643, against 44,605 units valued at \$31,587,672 for the corresponding period in 1926. August, 1927, exports totaled 8765 units valued at \$5,855,477 against 4142 units valued at \$3,370,764 shipped to foreign ports in August, 1926.

Norman G. Shidle has been appointed directing editor of the Chilton Class Journal publications, succeeding Julian Chase, who is now business manager of Automotive Industries. Mr. Shidle will continue as editor of Automotive Industries in addition to handling his new duties as directing editor.

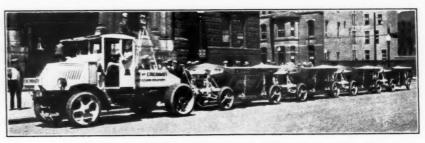
LECTRIC truck sales increased 10 per cent during the first half of the year, as compared with the same period of 1926, according to Electric Transportation News. Of the total number of electric trucks sold during this period, 68 per cent were purchased by the dairy industry. Sales records continue to indicate a trend toward the purchase of transportation equipment in fleets rather than by single units.

A retail and wholesale course in automotive selling, now open to enrollment, has just been completed by the Automotive Equipment Association Greater Market Development, according to Harry G. Moock. The course is a collection of the best selling methods actually in use in the trade, arranged in the six following units: Helping yourself by helping the owner; Advising the customer; Making it easy to buy; Overcoming sales resistance; Bullding up steady trade; and Greater market development.

STANDARDIZATION of bus electrical equipment and the further development of the activities and membership of the Field Division were the major topics discussed at the summer meeting of Automotive Electrical Association, held at Shawnee-on-Dela-

ware, Pa., Sept. 12 to 14.

In connection with the activities of the Field Division, a committee was appointed to formulate a program for the future activities of this group. A reissue of the Universal Parts Catalog published for the first time in February of this year, also was approved.



A train of Highway trailers equipped with Christensen air brakes recently purchased by the Street Cleaning Department of the City of Cincinnati

WHILE present statis-tics indicate that the entire automotive production for 1927 will be about 15 per cent below 1926, truck and bus production alone shows but very little change. The falling off in volume has been about 17 per cent in the passenger car division for the first eight months of the year, as

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against 1.6 per cent in the truck and bus division. Truck and bus production for the first eight months was 336,114 units as against 341,788 units for the same period 1926.

Joseph Jettinghoff has been elected president of the recently formed Gramm Finance Co., which was organized as a further financial assistance to Gramm Motors, Inc., Lima, Ohio. The company, incorporated by A. B. King, R. H. Jettinghoff and Joseph Jettinghoff, has an authorized issue of 2500 shares of preferred stocks at \$100 each and 6000 shares of common stock no par value.

WARNER ELECTRIC BRAKE been formed with \$1,000,000 authorized capital stock by A. P. Warner and associates of Beloit, Wis., to undertake further development and production on an electrically operated brake for automotive vehicles.

B. W. Ruark has been appointed assistant to the commissioner of the Automotive Equipment Association, succeeding J. E. Duffield who resigned in October. Mr. Ruark is a veteran in the association, having entered its employ in 1922 as a field secretary.

NEW YORK CITY is perfecting plans for keeping its streets more completely cleared of snow this winter, than ever before. At present the city has 700 pieces of motor driven equipment and 1500 trucks available for snow removal.

Hal T. Boulden has been appointed manager of the Truck Division of the Pierce - Arrow Motor Car Company. Mr. Bolden has many years of practical experience in the truck industry. At one time he was president of the National Association of Motor Truck Managers, now merged with Motor Bruck Industries, Inc. President in charge of sales, service and advertising of the Selden Truck Corp.



5200-gal. frameless trailer tank designed by Coleman Motors and Columbian Steel Tank Co.

O. W. Hayes, president of the Republic Motor Truck Co., in out-lining the sales policy to be pursued by his company in merchandizing the recently acquired Linn tractor, said that with the exception of New York State, the tractor will be handled as an addition to the Republic truck line by Republic dealers throughout the country. In New York the Linn organization, which is located at Morris, New York, has worked out an extensive selling organization which will remain in charge of truck sales for the Empire State.

THE Detroit Branch of General Motors Truck Co. just moved in its new \$400,000 home recently completed. It is located on Vermont Ave. between Alexandrine and Linden Aves. building provides 60,000 sq. ft. of floor space and contains all facilities for efficient sales and service work.



M EMBERS of the National Automobile Chamber of Commerce produced 273,309 cars and trucks in September, which slightly exceeds the production of September, 1926, when 273,295 units were recorded. For the first nine months of 1927 N.A.C.C. members produced 2,605,804 units, an increase of 228,351

or 6 per cent over the corresponding period of 1926.

Harry Hough has been elected president of the B. F. Goodrich Co. to succeed the late Bertram G. Work. Mr. Hough has been vice-president and comptroller of the company for the past ten years. B. M. Goodrich, son of Dr. B. F. Goodrich, founder of the company, has been elected chairman of the board. J. D. Tew, works manager, was named first vice-president and a member of the executive committee, filling the vacancy left by the death of L. B. Brown. G. M. Jett was named secretary and T. G. Graham was named works manager.

B USINESS prospects in the automotive parts and accessory field are excellent as autumn gets under way, according to the Motor and Accessory Manufacturing Association. August sales showed a decided gain over July and September more than seasonally held its own.

C. Earl Dawson has been appointed manager of the fleet sales department of the General Motors Corp. This department handles both commercial and passenger fleet sales.

SEIBERLING RUBBER CO. is recommending a policy of instalment sales to its dealer organization. The company is assisting dealers in each state to formulate a sales plan complying with the state laws.

With general manufacturing activity somewhat below the levels of a year ago and despite the failure of fall business to show the normal upswing from the summer dullness, there

is nevertheless a good deal in the situation to interest the commercial vehicle industry.

The year to date has been made notable by a striking recovery in the purchasing power of the farmer. Although this is not true of all sections, it pertains to by far the greater part of the farming community. Consequently truck sales are favored in what is a market of vast potential possibilities.

The entire region from Minne-

Truck Outlook Promising

sota to the Pacific Coast has been favored with one of the best grain crops in recent years. In Kansas and the Southwest wheat has been a disappointment but the corn crop is far better and prices have increased. Higher cattle prices in these sections have also been beneficial. The lower yield of cotton has been more than compensated for by the higher value of

Of primary importance to the

heavy duty vehicle manufacturers and dealers is the continuance of a high level of construction activity. September construction contracts in the 37 states east of the Rocky

Mountains, it is true, declined 7 per cent from the total of the corresponding month last year, but for the first nine months of 1927 new construction started was less than 1 per cent under the same period of 1926. Easy money continues to

favor construction.

The volume of payment by check and freight car loadings, exclusive of coal, points to a maintenance of heavy distribution of goods and commodities.

THI

UNDER changes in the sales policy by the Goodyear Tire & Rubber Company larger discounts will be allowed its dealers on tires sold to corporations and commercial accounts. Other leading tire manufacturers are reported as putting somewhat similar discount policies into effect.

> Lorenzo D. Brown, 52, vice-president of the B. F. Goodrich Co., recently died suddenly of heart disease. Since the death of Bertram G. Work, president, Mr. Brown had been mentioned prominently as his successor.

THE National Safety Council held its Sixteenth Annual Safety Congress at the Stevens Hotel, Chicago, late in September with about 5000 persons in attendance.

Watt Moreland, president of the Moreland Truck Co., denies reports that negotiations are nearing com-pletion for merger of the Moreland, Fageol and Kleiber companies.

AMERICAN COACH & BODY CO. has taken over the Truck Engineering Co. of Cleveland, manufacturer of hydraulic hoists, cabs, winches and tanks for trucks.

R. T. Stevens, president of the Penn-Ohio Edison Co., New York, was elected president of the Ameri-can Electric Railway Association at the Cleveland convention.

NET profit of Ford Motor Co. of Canada, Ltd., for the year ended December 31, 1926, totaled \$5,341,177 after depreciation, taxes, plant writeoffs, etc., excluding certain rebates which may be received at a later date.

John T. Spicer has been appointed manager of the General Automotive Division of the Johns-Manville Corp. Mr. Spicer was previously manager of automotive replacement sales for Johns-Manville placement ville.



C. G. McDonough was appointed director of sales of the Selden Truck Corp. He was formerly sales manager, Kelly-Springfield Truck & Bus Corp.

P UBLIC announcement of the new Ford car is expected about November 1, according to the latest statement obtained from the Ford Company by the Chilton Class Journal Co. nouncement will not be made until every Ford dealer, numbering about 10,000, has at least one car for display.

By compiling the best features of accounting systems used by well-known bus operators throughout the country, Irville Augustus May, C.P.A., has outlined in his book "Motor Bus Accounting Practice," a complete system of accounting for both large and small companies in a simple and effective manner. Over 50 practical forms are reproduced, together with descriptions of others. The book is of value to owners, operators, accounting officials, as well as certified public accountants. Ronald Press Co., New York City, is the publisher. Price, \$6.

R UGGLES TRUCK CO., Saginaw, Mich., has been placed in the hands of a receiver through friendly action brought in the Saginaw County Circuit Court.

NINETEEN trucks are scheduled for the National Automobile shows to date: American-La France, Chevrolet Corbitt, Cunningham, Federal, G.M.C. Graham, Larrabee-Deyo, Reo, Roamer, Sayers & Scoville, Schacht, Selden Star, Stewart, Studebaker, Stutz, Ward and Yellow.

Arthur E. Clifford, 59, business manager of Automotive Industries, died of heart failure in Cleveland. Mr. Clifford had been actively en-gaged in the industrial and trade publishing field for over 35 years.

ON October 21 the Autocar Company, Ardmore, Pa., will celebrate its thirtieth anniversary. In the anniversary number of Autocar Messen. ger a brief resume of Autocar's progress from 1897 to the present is given

George Goldman, manager of the Kansas City Branch of Northeast Service, Inc., has embarked on a ten months' trip through South America and the West Indies, where he will make a personal study of automotive conditions and also call on authorized Northeast Service Stations.

R EO reports continuance of its 1927 sales record with an increase of 20 per cent for commercial shipments in September, 1927, against the same month in 1926. Commercial shipments for the month totaled 2047.

Fred J. Fisher and C. R. Bitting were selected to fill two of three new places on the Baldwin Loco-motive Works Board of Directors.

BROCKWAY MOTOR TRUCK CORP. will erect a sales and service station at White Plains, N. Y., having just acquired a plot 200 ft. square in the industrial section on Kensio

C. G. Hubbs has been appointed assistant to the president of the Pierce-Arrow Motor Car Co. Mr. Hubbs will also assist L. E. Corcoran, general sales manager, in carrying out the company's program of sales expansion.

Coming Events

SHOWS

Buffalo, 174th Armory Jan. 21-28
Camden, N. J., Convention Hall,
Jan. 30-Feb. 4
*Chicago, National Automobile Chamber of Commerce, Coliseum,
Inc. 28-Feb. 4

Jan. 28-Feb. Jan. 28-Feb. 4

*Cincinnati, Music HallJan. 15-21

*Cleveland, Public Auditorium...Jan. 21-28

Deadwood, S. Dak., Auditorium...Feb. 20-25

Denver, Auditorium.....Feb. 27-March 3

Detroit, Convention HallJan. 21-28

Indianapolis, Auto Show Bldg...Feb. 13-18

*Kansas City Mo. American Boyal

National Standard Parts Association, Convention Hall, Cleveland..Nov. 14-18

*New York, National Automobile Chamber of Commerce, Grand Central Palace Jan. Providence, R. I., Cranston Street Providence, R. I., Cranston Street
Armory Feb. 11-18
*St. Louis, City Market Bldg... Feb. 20-25
San Bernardino, Cal., National Orange
Show Bldg... Feb. 16-26
*San Francisco, Civic Auditorium,
Jan. 28-Feb. 4
Sheheygan Win Febres Maliterium

* Will have Special Shop Equipment Exhibit. CONVENTIONS

American Road Builders Ass'n, Hotel
Hollenden, Cleveland.......Jan. 9-13
Automotive Equipment Association,
Coliseum, ChicagoNov. 7-12
National Association of Finance Companies, Congress Hotel, Chicago, Nov. 14-15

National Standard Parts Association. Hotel Hollenden, Cleveland...Nov. 14-11 National Tire Dealers Association, Brown Hotel, Louisville, Ky., Nov. 15-11

United States Good Roads Association and Bankhead National Highway Association, Des Moines, May 28-June

N. A. D. A.
Chicago, Jan. 31-Feb. 2—Annual, Palmer
House.
Chicago, Feb. 1—Banquet, Palmer House
New York, Jan. 9-10—Eastern District
Hotel Commodore.

S. A. E.
Chicago, Oct. 25-27—National Transportstion and Service Meeting, Hotel Sheman.
Detroit, Jan. 24-27—Annual Meeting.
New York, Jan. 12—Annual Dinner.

MING FEATURES OF CHILTO CHILTON Nov. 10—Marketing Annual—Motor Williams Wholesale. Feb. 18—Statistical Issue—Automotive Issue—

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BETHLEHEM STEEL COMPANY—General Offices: BETHLEHEM, PA.

District Offices: New York, Boston, Philadelphia, Baltimore, Washington, Atlanta, Buffalo, Pittsburgh,
Cleveland, Cincinnati, Chicago, Detroit, St. Louis, San Francisco, Los Angeles, Seattle, Portland

Bethlehem Steel Export Corporation, 25 Broadway, New York City, Sole Exporter of Our Commercial Products

BETHLEHEM

THE

Know Each Prospect's Needs to be Successful

(Continued from page 19)

his spare moments were occupied with an analysis and study of things automotive. He knew foreign construction as well as domestic. It was therefore a logical development that, when J. E. Tilt sublet a machine shop to Mr. Knight, the inventor of the Knight engine and first manufacturer of the Knight motor car, C. A. should take a deep interest in Mr. Knight and his work. As their acquaintance developed, each found the other had many interesting ideas, and before long C. A. Tilt was sales manager of the Knight Motor Car Co.

Much too interested himself in passenger cars to remain long with anyone, Mr. Tilt left the Knight Motor Car Co., after a short association, and in 1905 built his first automobile. This car was exhibited at the National Automobile Show, and its reception by the public was sufficient incentive for the building of more cars, a project that met with great success. State license registrations show an occasional Diamond-T passenger car still in operation, many of them over 18 years old.

The Diamond-T Motor Car Co., with C. A. Tilt as president, general manager, salesman and chief mechanic, built Diamond-T passenger cars until 1909, with better than average success. During this period of four years, C. A. Tilt was watching the progress of the automotive industry with keen interest, and at that time he visioned the needs of commerce and the possibilities offered by a commercial vehicle to haul freight.

He drew his first plans for a Diamond-T truck in 1910, and from these plans obtained his first order for a truck from the L. Wolff Manufacturing Co., one of the oldest plumbing supply houses in the country. That truck was finished and on the streets in 1911. The next year Mr. Tilt built nine Diamond-T trucks. From these small beginnings sprang the present powerful organization, among the leaders of the industry.

Other than the Diamond-T, C. A. Tilt has no business interests. He is active today, on a larger scale, than he was in 1905 in the administration of the company business. He is still a young man, in his forties. Born in Chicago he has lived in that city all his life. He is keenly interested in all American sports, is a better-than-average golfer, and owns one of the largest yachts—The Sentinel—in Chicago.

Both Salesmanager and Salesman

(Continued from page 12)

In the smaller centers where the branch has dealerships, some of the dealers, as is customary in such places, carry in addition to trucks some make or makes of passenger cars, while other dealers handle implements. Naturally, a "territory traveler" such as Mr. Graham

in his capacity of wholesale manager, is able to perform a very useful function in seeing that at least as much effort and enthusiasm are expended by these dealers on the trucks as on the other merchandise they carry. It is extremely doubtful if any passenger car distributor, or jobber of implements, will give the dealer and his salesmen any more attention, or service of greater value than that afforded by the Brockway factory branch through its wholesale manager.

Service to Customers

(Continued from page 14)

area is provided with a 14-ft. clearance. The columns along the aisles are designed to carry the rails for crane runways. The monitors over the aisleways provide sufficient height to give clearance for lifting high bodies.

The spacings of the columns in the basement provides an ideal condition for the storage of three vehicles between columns. The clearance in this section of the building is slightly less than that provided for the shop in that it will be used almost entirely for the storage of chassis.

Rear Springs Changed in 90 Minutes

(Continued from page 17)

may be offered to owners with profit. It is not likely that a special trip will be made to the service station for this work but it may well be sold whenever a truck is in a shop for other work. Tightening is often neglected by small fleet owners and in many cases they have not the wrenches required to do the job right. A forceful argument in favor of keeping clips tight can be put over when a spring breaks in the middle

Springs are composed of "plates" rather than "leaves" in the nomenclature of spring factories. The longest plate is the main plate and the shortest plate is the "top" plate irrepective of the position of the spring in the chassis. When plates are ordered from spring makers or their service stations the wording should be such that there can be no misunderstanding.

Baltimore Opens Automotive School

A school for the training of automotive mechanics, operated by the public school system of Baltimore in conjunction with a committee representing the trade, opened in Baltimore early in October. Chas. W. Sylvester, Director of Vocational Education of the Schools, is in charge of the plan. Members of the Baltimore Automobile Trade Association, Inc., are much interested in the school and have promised to aid in every way. Many of them have announced that they will enroll their mechanics in the night classes.

Before the First Sales

(Continued from page 11)

"I am not in favor in the truck field of requiring or expecting salesmen to make any stated number of calls a day," explains Hambly. Under our plan of operation our salesmen make fewer calls, but our results are much greater than the average. It isn't the number of calls a truck salesman makes, but how well he makes each call. By this I mean primarily, how carefully he prepares himself before making the call. We limit several of our sales. men, of whom there are seven in all. to a definite number of prospects. For instance, one salesman may have 50 corporations, including customers and new prospects, which constitutes his entire list, and he must confine his efforts among them exclusively. Another man may have 50 firms in the dump truck and roadbuilding field which must occupy all of his attention. There is nothing quite as important as concentrated sales effort, if satisfactory results are to be obtained. I would rather have a salesman of mine make one call a day, and make the most out of it, than to have him make 10 calls a day in a more or less haphazard manner.

Hambly has found the motion picture projector a valuable aid to sales. It is brought into play when a salesman has developed a prospect to a point where he is in a receptive mood. A screen is quickly fastened on the wall in the prospect's office, an electrical connection is made, and Sterling trucks in service under varying conditions are strikingly presented.

The direct-by-mail advertising of the Los Angeles firm is considerably out of the ordinary. Immediately upon delivery of a new truck or a fleet of trucks to a customer, a photograph of the equipment is taken with an atmospheric background suggestion of the business of the purchaser. This actual picture is then reproduced on standard-sized postcards and mailed as "news" to other fleet operators.

The cards bear only a simple statement of fact, such as:

"Four Sterling Trucks just delivered to Braun, Bryant & Austin. Inc. (Operating Ten Sterlings) sold by the Sterling Motor Co. of California, 2420 Santa Fe Ave., Los Angeles."

"It is only human nature that we are all interested in what the other fellow is doing who is engaged in the same or similar line of business," says Hambly. "Our campaign of 'news pictures' has been productive of excellent results."

Construction work will soon start in Los Angeles on a spacious new sales and service plant for the Sterling Motor Truck Company of California. Systematically planned and directed sales effort has built a volume of business for this firm that demands much greater space and facilities to handle.

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"I'VE GOT A REAL JOB NOW"

THE tugging and twisting days are over for this fellow and he's a happy man. Likes his job and his boss... courteous to every passenger and always alert. For the Ross Cam and Lever Steering Gear on his bus makes steering easier and safer. It makes a bus twice as easy to handle and brings relief from nerve strain. A better driver is a more valuable employe and a goodwill builder. That's part of the Ross story and the rest is just as interesting. When can we tell it to you?

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EASIER STEERING

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Blazing the Way in Truck Engineering

From your standpoint as a dealer, it is absolutely vital to have up-to-date merchandise that makes a favorable impression on the customer.

When you show the Federal line, you can point to a list of features that includes every recent improvement of genuine worth that has been made in automotive engineering. Here are just a few:

Exclusive truck engines;
High turbulence cylinder heads;
"Triple Seal"—oil filter, air cleaner and gasoline strainer;
Extra heavy crankshafts;
3, 4 and 7 speed transmissions;
Quick-acting clutches for modern

Add to these a choice of four and six-cylinder engines, each designed

traffic.

expressly for truck use—add to these interchangeability of engines and bodies and scores of options in tires, wheelbases and other features—and you have a line without parallel in its appeal.

Here is a line that will get business for you—and hold it. It is typical of the tremendous progress shown every year for the past 17 years by Federal—a motor transport leader from the start.

Write for further information on these fine trucks and Federal's great program of co-operation with distributors and dealers. Get our book, "Federal Franchise Facts" that gives full details and tells of the big money being made by Federal dealers. Send for your copy today.

FEDERAL MOTOR TRUCK COMPANY
5786 Federal Avenue Detroit, Michigan

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Commercial Car Specifications—Corrected Monthly

The Specifications, Chassis Prices, Etc., Are Corrected Each Month From Data Supplied Direct by the Makers. Gasoline Tractor-Trucks Will be Found at the End of Gasoline Commercial Cars

Those Chassis Which Are Sold and Recommended for Bus Use Are Designated in the Following Table by Reference Sign (§) in Front of the Name

For Motor Bus Chassis See Pages 44 and 45 (Where prices are not given it is because we have been unable to get them from authoritative sources)

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Motor Bus Chassis Specifications

Key of abbreviations, page 46 DIMENSIONS (In.) Overall Length 250 Floor Height (.f4) suibsA galawT For Other Chassis Which Are Recommended and Adaptable for Bus Use, See Models Having Sign (§) in the "COMMERCIAL CAR SPECIFICATIONS" 288 Wheels-Make TIRES AND WHEELS Rear TIRES (In.) Steering Gear Make FRONT 610B 5227 5227 Make and Model Brake Location REAR AXLE Final Drive BEBERRE Tim Tim Cla B6000 Wis 1331K Col 54003 We 6431 Make and Model Universal Make Separation of the separation o Number of Forward Speeds TRANSMISSION * ******* GEARSET CLUTCH D. B-L 0000 Low M. P. H. 344444 Нцы М. Р. Н. 12-115 12-115 12-115 12-220 12-220 12-220 Voltage and Amp. Hr. Cap. ELECTRICAL SYSTEM Battery ENERGY WE Generator and Starter Make ZZZZ 8 8 E E E E gnition System Make Carburctor Make Radiator Make ENGINE Number of Cylinders, Bore and Stroke Make and Model Ha S Ha S Con 6B Con 7T We SU With RUS Wheelbase Recommended GENERAL WEIGHT 8460 9280 9900 6350 9400 Chassis with Body 4910 5110 6500 3976 4150 Chassla Only Seating Capacity A.C.F. 508 A.C.F. 519 (gas. elec.). A.C.F. 601 Acme 118. Acme 118. Beldgepor HB Beldgepor BB. Brockway RB. MAKE AND MODEL

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Electric Commercial Cars

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Name and Model Number	Total Weight Resting on Four Tires	Chassis Weight— Exclusive of Battery	Minimum Load Capacity	Maximum Load Capacity	Chassis Price	Maximum Speed	Location of Battery	Mileage Per Charge	Motor	Controller	Speeds Forward	Drive	Rear Axle	Spring	Front Tires	Rear Tires	Steering Gear	Wheelbase	Weight on Rear Wheele
C-T-H1. C-T F-1.5. C-T H-1.5. C-T H-1.5. C-T H-2. C-T H-2. C-T H-2. C-T H-2. C-T A-7. C-T A-7. C-T A-7. C-T A-10 C-T F-10 C-T F-10 C-T F-10 C-T F-10 C-T B-10 C-T F-10 C-T B-10 C-T B-1	4650	2400 2800 2800 3100 3100 4200 6500 7000 3600 4200 12200 2400 3400 4200 4830 6500 7200 1800 7200 1800 7200 1800 7200 4830 6500 7400 7400 7400 7400 7400 7400 7400 7	600 1020 2170 6180 9500 13780	1150 1700 28430 7760 11200 15920	1850 2475 2475 2675 2675 3259 5150 4300 5450 4500	14 14 14 14 11 11 11 10 8 8 15 12 13 11 10 15 14 14 14 13 11 11 10 10 15 14 14 11 11 11 10 10 10 10 10 10 10 10 10 10	AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA	55 50 60 60 50 50 50 50 50 50 50 50 50 50 50 50 50	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	Own	44444444445 4555555544445555	Own Own Own Own Own I Own C C C C C C C C S Own Own Own W W W W W W W W W	FF FF FF FOwn Own Own Own Own Own Own Own She She She She	She	S 36x3 S 36x33/2 S 36x3/2 S 36x3/2 S 36x4 S 36x5 S 36x5 S 36x5 S 36x5 S 36x5 S 36x5 S 36x5 S 36x4 S 36x4 S 36x4 S 36x4 S 36x4 S 36x4 S 36x5 S	S 36x4 S 36x4 S 36x4 S 36x5 S 36x7 S 36x7 DS36x5 S 36x8 DS36x6 DS36x6 S 34x6 S 36x3 DS36x3 DS36x4 DS36x3 S 32x4 DS36x3 S 32x4 S 36x5 S 32x4 S 36x5 S 36x6	WWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWW	108 94 116 96 124 118 122 152 152 112 135 168 94 94 101 131 141 286 88 89 109 101 114 108 108 109 109 114 109 114 109 114 109 114 109 115 115	67 67 67 67 67 67 67 68 68 67 68 66 66 66 66 66 66 66 66 67 71

NOTE: Battery Equipment on all above makes is at the option of the purchaser. Battery Location Abbreviations: A-amidships; H-under hood; and S-under seat

KEY OF ABBREVIATIONS

For addresses of manufacturers listed below see Chilton Catalog and Directory

Wheelbase

*More than one wheelbase furnished.

Tires

Balloon. —Pneumatics standard equip. P—Dual pneumatics standard equipment. -Solids. S-Dual solids. -Pneumatics can be furnished DSat extra cost.

Engine

Bud—Buda Co. Con—Continental M. Corp. D—Head and Side. FP—Full Pressure to ail bearings including wrist pins.

H—Overhead.

HaS—American Car & Foundry Co.

Her—Hercules Motor Corp.

I—In Head.

Jackson—Master M. T. Mfg. Co.

Kni—Yellow Sleeve V. E. Wks.

L-L-Head.

Lyc—Lycoming M. Corp.

PC—Pressure to all crankshaft and connecting-rod bearings.

PS—Pressure with splash.

SP—Circulating splash.

T—T-Head.

Wau—Waukesha M. Co.

Wis—Wisconsin M. Mfg. Co.

Yell—Yellow Sleeve V. E. Wks.

Governor

X—Sleeve.

Governor

Dup—Eisemann Magneto Corp.

Han—Handy Gov. Co.

K. P.—K. P. Products Co.

McC—E. R. Klemm.

Mon—Monarch Gov. Co.

Non—Not Supplied.

Pha—Pharo Mfg. Co.

Pie—Pierce Governor Co.

Sim—Eisemann Magneto Corp.

Wau—Waukesha M. Co.

Badiator

Wau-Waukesha M. Co.
Radlator
Bow-Bowerbank, E. R. Co.
Bus-Bush Mfg. Co.
Chi-Chicago Mfg. Co.
Fed-Fedders Mfg. Co.
G&O-G. & O. Mfg. Co.
Har-Harrison Rad. Corp.
Lon-Long Mfg. Co.
McC-McCord Rad. & Mfg. Co.
McK-McKinnon Dash Co.
Mod-Modine Mfg. Co.
Per-Perfex Corp.
R-T-Rome-Turney Rad. Co.
Tyr-Tyree Auto Rad. Mfg. Co.
U. S.—U. S. Cartridge Co.

Fuel System

B.B.—Penberthy Injector Co. Car—Carter Carburetor Co. G—Gravity. Hol—Holley Car. Co. Joh—Johnson Co. Mar—Marvel Carburetor Co. P-Pressure.
Sch-Wheeler Schebler Car. Co.
Ste-Detroit Lubricator Co.
Str-Stromberg Motor Devices Co. Tillotson Mfg. Co. V—Vacuum. Zen—Zenith-Detroit Corp.

Electrical Systems

Electrical Systems

†—Generator & Starter at Extra Cost.

†—Starter not supplied, Generator at Extra Cost.

*—Starter at Extra Cost.

A-L—Electric Auto-Lite Corp.
Apo—Apollo Magneto Corp.
Bos-A—Am. Bosch Magneto Co.
Con—Connecticut Telephone &
Electric Co.
Del—Dayton Eng. Lab. Co.
DJ—DeJon Elec. Corp.
Dyn—Owen Dyneto Corp.
Eis—Eisemann Magneto Corp.
Eis—Eisemann Magneto Corp.
Exi—Electric S. B. Co.
G&D—Gray & Davis.
Gou—Gould S. B. Co.
L-N—Leece-Neville Co.
N-E—North East Elect. Co.
Non—Not Supplied.
Pol—Prest-O-Lite Co.
Rem—Delco-Remy Co.
Sci—Scintilla Magneto Co.
Spl—Splitdorf Electrical Co.
USL—U. S. Light & Heat Corp.
Ves—Vesta Battery Corp.
Wes—Westinghouse E. & M. Co.
Wil—Willard S. B. Co.
Clutch and Gearset -Generator & Starter at Ex-

Clutch and Gearset

-Other ratios optional. A—Amidships.

B & B—Borg & Beck Co.

B-L—Brown-Lipe Gear Co.

Cot—Cotta Trans. Corp.

Cov—Covert Gear Co.

Det—A. J. Detlaff Co.

D-G—Detroit Gear & Mach. Co.

D—Disk.

Ful—Fuller & Sons Mfg. Co.

H-S—Merchant & Evans Co.

J—Unit with Jackshaft.

K—Cone.

Lon—Long Mfg. Co. -Amidships.

M-E—Merchant & Evans Co.
M. M.—Mechanics Mach. Co.
Mun—Muncie Gear Works.
O—Disk in Oil.
P—Plate. P-Plate.
Roc-Rockford Drill. Mach. Co.
U-Unit with Engine.
W-G-Warner Gear Co.
Yell-Yellow Sleeve V. E. Wks.

Universal

Universal
B.G.—Universal Machine Co.
Blo—Blood Bros, Mach. Co.
Har—Spicer Mfg. Co.
M-E—Merchant & Evans Co.
M. M.—Mechanics Machine Co.
Pet—Cleveland Univ. Parts Co.
Pic—Pick Mig. Co.
Spi—Spicer Mfg. Co.
The—Thermoid Rubber Co.
The—Thermoid Rubber Co.
U-M—Universal Machine Co.
U-P—Universal Products Co.

Front and Rear Axles

-Semi-Floating. -Three-Quarter Floating. "
—Three-Quarter Floating
B—Straight Bevel.
Cla—Clark Equip. Co.
Col—Columbia Axle Co.
Con—Continental Axle Co.
C—Chain.
D—Dead.
Eat—Eaton Axle Co.
F—Floating. Eat—Eaton Axle F—Floating. I—Internal Gear. I—Internal Gear.
P—Spur Gear.
R—Double Reduction.
S—Spiral Bevel.
Sal—Salisbury Axle Co.
She—Sheldon Axle & Spring Co.
Shu—Shuler Axle Co., Inc.
Std—Standard Parts Co.
Tim—Timken Det. Axle Co.
Tor—Eaton Axle & Spring Co.
W—Worm.
Wis—Wisconsin Parts Co.

Brake

A—Rear Wheels only.
B—Driveshaft and Rear Wheels
C—6 Wheel Brakes.
D—Jackshaft and Rear Wheels.
E—4 Wheel Brakes.

Springs

Bea—Eaton Spring Corp.
Bet—Betts Bros. Spring Co.
Bur—Burton Auto Sp. Corp.
Cha—Champion Auto Sp. Co.
Del—D. Delany & Son.
Det—Detroit Steel Prod Co.
Har—Harvey Sp. & Forging Co.

I. C.—Iron City Sp. Co.
Mar—Maremont Mig. Co.
Mat—Mather Spring Co.
Mat—E. R. Merrill Spring Co.
Pen—Penn Sp. Works.
Per—Eaton Bum. & Sp. Co.
Row—Wm. & Harvey Rowland.
Sav—New Era Sp. & Spec. Co.
She—Sheldon Axle & Sp. Co.
S. P.—Spring Perch Co.
S. S.—Standard Steel Sp. Co.
Tem—Temme Spring Corp.
Tut—Tuthill Sp. Co.
U. S.—United States Sp. Co.
Steering Gear.

Steering Gear

Steering Gear
CAS—Columbus G & P. Co.
D-G—Detroit Gear & Mach. Co.
Dod—Dodge Bros. Co.
Gem—Gemmer Mfg. Co.
Han—Hannum Mfg. Co.
Jac—Saginaw Products Co.
Lav—Hannum Mfg. Co.
Ros—Ross Gear & Tool Co.
Woh—Wohlrab Gear Co.

Wheels

Arc—Archibald Wheel Co.
Bet—Bethlehem Steel Co.
Bim—Bimel S. & A. Wheel Co.
Bud—Budd Wheel Co. Bud—Budd Wheel Co.
Cal—California Steel Wheel
Corp.
Cla—Clark Equip. Co.
Day—Dayton Steel Foun. Co.
Dis—Motor Wheel Corp.
Hay—Kelsey-Hayes Wheel Co.
Hoo—Hoopes, Bro. & Darlington.

ton.
Ind—Indestructible Wheel Co.
Int—Mathews Steel Foundry Co.
Jon—Phineas, Jones & Co.
K-B—Kay Brunner Steel Co.
Kel—Kelsey-Hayes Wheel Co.
Mot—Motor Wheel Corp.
M.M.—Mich, Malleable Iron Co.
Pru—Prudden Wheel Co.
Sch.—St. Marys W. & S. Co.
Smi—Smith Wheel Inc.
StM—St. Marys Wheel Co.
Std—Standard Wheel Co.
Van—Van Wheel Corp.
Van Metal Wheel Div., Erle
Malleable Iron Co. ton.

Rim Equipment

Rim Equipment
Cle—Cleveland Weld. & Mfg. Co.
Fir—Firestone Steel Prod. Co.
Gdy—Goodyear Tire & Rub Co.
Hay—Hayes Wheel Co.
Jax—Jaxon Steel Prod. Co.
Kel—Kelsey Wheel Co.
Non—None Supplied.